

Patent Claims:

1 – 10 (canceled)

11. (new) A method for determining a gain spectrum for a Raman amplifier located downstream from an optical fiber amplifier in a WDM transmission system, comprising:

switching the Raman amplifier into an on and off state;

measuring an optical spectra at an output of the Raman amplifier with a pumping source when the optical fiber amplifier is switched into an active state to cause amplified spontaneous emission; and

determining the gain spectrum from these spectra.

12. (new) The method in accordance with Claim 11, wherein a first spectrum is measured with the pumping source for the Raman amplifier switched off and the pumping source for the optical fiber amplifier switched on, a third spectrum is measured with the pumping source for the Raman amplifier switched on and the pumping source for the optical fiber amplifier switched on, and the gain spectrum for the Raman amplifier is calculated according to the following rule: $\text{Gain Spectrum} = (\text{Third Spectrum})/(\text{First Spectrum})$.

13. (new) The method in accordance with Claim 11, wherein a first spectrum is measured with the pumping source for the Raman amplifier switched off and the pumping source for the optical fiber amplifier switched on, a second spectrum is measured with the pumping source for the Raman amplifier switched on and the pumping source for the optical fiber amplifier switched off, a third spectrum is measured with the pumping source for the Raman amplifier switched on and the pumping source for the optical fiber amplifier switched on, and the gain spectrum for the Raman amplifier is calculated according to the following rule: $\text{Gain Spectrum} = (\text{Third Spectrum} - \text{Second Spectrum})/(\text{First Spectrum})$.

14. (new) The method in accordance with Claim 11, wherein further spectra are measured for transmission links with additional optical fiber amplifiers and additional Raman amplifiers by switching their pumping sources on and off and from this the gain spectra of the Raman amplifiers are determined.

15. (new) The method in accordance with Claim 11, wherein during the commissioning of a transmission link having several sections containing an optical fiber amplifier and a Raman amplifier the determination of the gain spectra is carried out section by section.

16. (new) The method in accordance with Claim 11, wherein for determining the gain spectrum, channel signals are attenuated so that a high level of amplified spontaneous emission arises at the output of the optical fiber amplifier.

17. (new) An arrangement for determining the gain spectrum of a Raman amplifier located downstream from an optical fiber amplifier in a WDM transmission system, comprising:

- a control device to switch on and off the pumping sources for the Raman amplifier and to activate the optical fiber amplifier when the optical fiber amplifier is in the active state causing amplified spontaneous emission;

- spectra generated with the Raman amplifier switched on and off are measured at an optical spectrum analyzer downstream from the Raman amplifier; and
- a gain spectrum determined from these spectra.

18. (new) The arrangement in accordance with Claim 17, wherein a unit for analyzing the spectra recorded by the optical spectrum analyzer and a regulator for controlling the spectral power components of the pumping source are connected to the optical spectrum analyzer.

19. (new) The arrangement in accordance with Claim 17, wherein the optical fiber amplifier provided is an Erbium-doped fiber amplifier, a semiconductor amplifier, or a discrete Raman amplifier.

20. (new) The arrangement in accordance with Claim 17, wherein an attenuation device is located upstream from the optical fiber amplifier and when a measurement is being made the attenuation device suppresses channel signals so that a signal with a high level of amplified spontaneous emission is provided to the Raman amplifier.